

BACHELOR OF ARTS IN EARTH SCIENCES - QUANTITATIVE REASONING CATEGORY III/IV AND STRETCH ENGLISH

120 Total Units Required

Minimum Number of Units in the Major: 49

This roadmap is a suggested plan of study and does not replace meeting with an advisor. Please note that students may need to adjust the actual sequence of courses based on course availability. Please consult an advisor in your major program for further guidance.

Course	Title	Units
First Semester		
ENG 104	Writing the First Year: Finding Your Voice Stretch I ¹	3
MATH 197	Prelude to Calculus I (Prerequisite for CHEM 115, MATH 226)	3
GE Area A ²		3
GE Area C		3
GE Area D		3
Units		15
Second Semester		
CHEM 115	General Chemistry I: Essential Concepts of Chemistry (Major Science and Math Foundation)	5
ENG 105	Writing the First Year: Finding Your Voice Stretch II (A2) ¹	3
MATH 198	Prelude to Calculus II (Prerequisite for MATH 226)	3
GE Area A		3
Units		14
Third Semester		
MATH 226	Calculus I (Major Science and Math Foundation, B4) ^{3,4}	4
Science and Math Foundation Elective ⁵		3
GE Area B: Life Science (B2)		3
GE Area D		3
GE Area E		3
Units		16
Fourth Semester		
MATH 227	Calculus II (Hidden Corequisite for PHYS 220)	4
Select One Set of Courses (Major Science and Math Foundation):		4

PHYS 111 & PHYS 112	General Physics I and General Physics I Laboratory (B1, B3)	
PHYS 220 & PHYS 222	General Physics with Calculus I and General Physics with Calculus I Laboratory (B1, B3)	
GE Area C		3
GE Area D		3
Units		14
Fifth Semester		
ERTH 400	Earth Systems I (Major Earth Sciences Foundation)	3
Earth Sciences Elective (19 units) - Take Two ⁶		6
GE Area C		3
GE Area UD-B: Upper-Division Physical and/or Life Sciences (Consider SF State Studies Course)		3
Units		15
Sixth Semester		
ERTH 205	Techniques in Earth Sciences (Major Earth Sciences Foundation)	2
ERTH 500	Earth Systems II (Major Earth Sciences Foundation)	3
Earth Sciences Elective (19 units) - Take One ⁶		3
GE Area UD-C: Upper-Division Arts and/or Humanities (Consider SF State Studies Course)		3
SF State Studies or University Elective ⁷		3
Units		14
Seventh Semester		
ERTH 600GW	Earth's Climate History - GVAR	3
Earth Sciences Elective (19 units) - Take Two ⁶		6
GE Area UD-D: Upper-Division Social Sciences (Consider SF State Studies Course)		3
SF State Studies or University Elective ⁷		3
Units		15
Eighth Semester		
Select One (Major Culminating Experience):		4
ERTH 652	Geoscience Partners in K-12 Education	
ERTH 690 & EARTH 695	Earth Sciences Capstone Presentation and Senior Project	
Earth Sciences Elective (19 units) - Take One ⁶		4
SF State Studies or University Elective - Take Three ⁷		9
Units		17
Total Units		120

¹ ENG 114 can only be taken if you complete Directed Self-Placement (DSP) and select ENG 114; if you choose ENG 104/ENG 105 through DSP you will satisfy A2 upon successful completion of ENG 105 in the second semester; multilingual students may be advised into alternative English courses.

² To avoid taking additional units, it is recommended that you meet **SF State Studies** requirements (AERM, GP, ES, SJ) within your GE or major.

³ Depending on courses completed through Early Start, students in Pathway/Category III or IV may be required to enroll in a support course to complement their Quantitative Reasoning/B4 requirement. There are multiple course options for this pathway. Before enrolling in a B4 course, students should verify their MATH Pathway/Category in their Student Center (<http://cms.sfsu.edu/content/student-center/>). Information regarding the courses that correspond with your MATH Pathway/Category can be found on the Developmental Studies Office Website (<http://developmentalstudies.sfsu.edu/>).

⁴ or EARTH 505

⁵ Chemistry, physics, or mathematics elective (may not be a course designed primarily to satisfy a General Education requirement.)

⁶ **Earth Sciences Electives (19 Units)**

- Select at least 19 units of Earth & Climate Sciences (ERTH) or closely related coursework, with a coherent theme approved by a Department of Earth & Climate Sciences advisor.
- At least 15 elective units must come from upper-division coursework. At least 11 elective units must come from EARTH courses.
- No more than four of the 19 elective units can come from courses designed primarily to satisfy General Education requirements (such as 100 and 300 level EARTH courses).

⁷ **Complementary Studies**

Students in all Bachelor of Arts programs at SF State must complete at least 12 units of Complementary Studies, comprising coursework with a prefix outside of the primary prefix for the major. For the B.A. program in Earth Sciences, that prefix is EARTH. Students who complete the Earth Sciences BA program will have met the Complementary Studies requirement automatically by completing the mathematics, physics, and chemistry coursework required for the degree.

Transfer students who have earned AA-T or AS-T degrees and are pursuing a similar B.A. degree at SF State are required to fulfill Complementary Studies requirements for their major only if these courses are included in the minimum units required for the major.